

CLAIMS

What is claimed is:

1. A scroll machine comprising:

a first scroll member having a first spiral wrap projecting outwardly from a first end plate, said first scroll member defining a recess;

a second scroll member having a second spiral scroll wrap projecting outwardly from a second end plate, said second spiral wrap being intermeshed with said first spiral wrap, said first scroll member being mounted for limited axial movement with respect to said second scroll member, said first scroll member being biased toward said second scroll member by a pressurized fluid disposed within said recess;

a drive member for causing said scroll members to orbit relating to one another whereby said spiral wraps will create pockets of progressively changing volume between a suction pressure zone at suction pressure and a discharge pressure zone at discharge pressure;

a seal disposed within said recess, said seal being biased toward a component of said scroll machine by said pressurized fluid to close a first leakage path extending between said discharge pressure zone and said suction pressure zone;

a biasing member disposed within said recess for urging said seal into engagement with said component;

a valve assembly for releasing said pressurized fluid whereby said

first scroll member will move axially with respect to said second scroll member to open a second leakage path between said suction pressure zone and said discharge pressure zone.

2. The scroll machine according to Claim 1 wherein said pressurized fluid is released to said suction pressure zone of said scroll machine.

3. The scroll machine according to Claim 1 wherein said valve assembly is a solenoid valve.

4. The scroll machine according to Claim 3 wherein said solenoid valve is operated in a pulsed manner to modulate the capacity of said scroll machine.

5. The scroll machine according to Claim 1 wherein said pressurized fluid is at a pressure between said suction pressure and said discharge pressure.

6. The scroll machine according to Claim 1 wherein said scroll machine further comprises a shell, said first and second scroll members being disposed within said shell.

7. The scroll machine according to Claim 6 wherein said valve assembly is disposed outside of said shell.

8. The scroll machine according to Claim 7 wherein said valve assembly is attached to said shell.

9. The scroll machine according to Claim 7 wherein said scroll machine further comprises a suction gas inlet, said valve assembly being attached to said suction gas inlet.

10. The scroll machine according to Claim 7 further comprising a tube extending through said shell, said tube fluidically connecting said recess and said valve assembly.

11. The scroll machine according to Claim 10 wherein said first scroll member defines a passage between said recess and said tube.

12. The scroll machine according to Claim 6 wherein said valve assembly is disposed within said shell.

13. The scroll machine according to Claim 12 wherein said valve assembly is attached to said first scroll member.

14. The scroll machine according to Claim 13 wherein said first scroll member defines a passage between said recess and said valve member.

15. The scroll machine according to Claim 1 wherein said valve assembly includes a ring rotatably disposed on said first scroll member.

16. The scroll machine according to Claim 15 further comprising a linear actuator for rotating said ring.

17. The scroll machine according to Claim 15 further comprising a valve member for rotating said ring.

18. The scroll machine according to Claim 17 wherein said valve member is a solenoid valve.

19. The scroll machine according to Claim 18 wherein said solenoid valve is operated in a pulsed manner to modulate the capacity of the scroll machine.

20. The scroll machine according to Claim 1 wherein said seal comprises a lip seal in engagement with said first scroll member.

21. The scroll machine according to Claim 1 further comprising a shell, said first and second scroll members being disposed within said shell, said seal comprising a lip seal in engagement with said shell.

22. The scroll machine according to Claim 21 wherein said shell includes an end cap, said lip seal being in engagement with said end cap.

23. The scroll machine according to Claim 1 further comprising a partition separating said suction pressure zone from said discharge pressure zone and a lip seal in engagement with said partition.

24. The scroll machine according to Claim 1 wherein said component is a shell, said first and second scroll members being disposed within said shell.

25. The scroll machine according to Claim 24 wherein said shell includes an end cap, said component being said end cap of said shell.

26. The scroll machine according to Claim 1 wherein said component is a partition separating said suction pressure zone from said discharge pressure zone.

27. A scroll machine comprising:

    a first scroll member having a first spiral wrap projecting outwardly from a first end plate, said first scroll member defining a recess;

    a second scroll member having a second spiral wrap projecting outwardly from a second end plate, said second spiral wrap being intermeshed with said first spiral wrap, said first scroll member being mounted for limited axial

movement with respect to said second scroll member, said first scroll member being biased toward said second scroll member by a pressurized fluid disposed within said recess;

    a drive member for causing said scroll members to orbit relative to one another whereby said spiral wraps will create pockets of progressively changing volume between a suction pressure zone at suction pressure and a discharge pressure zone at discharge pressure;

    a first lip seal disposed between said first scroll member and a component of said scroll machine, said first lip seal isolating said recess from said discharge pressure zone;

    a second lip seal disposed between said first scroll member and said component of said scroll machine, said second lip seal isolating said recess from said suction pressure zone;

    a valve assembly for releasing said pressurized fluid whereby said first scroll member will move axially with respect to said second scroll member to open a leakage path between said suction pressure zone and said discharge pressure zone.

28. The scroll machine according to Claim 27 wherein said component is a shell, said first and second scroll members being disposed within said shell.

29. The scroll machine according to Claim 28 wherein said pressurized fluid is at a pressure between said suction pressure and said discharge pressure.

30. The scroll machine according to Claim 27 wherein said pressurized fluid is released to said suction pressure zone of said scroll machine.

31. The scroll machine according to Claim 27 wherein said valve assembly is a solenoid valve.

32. The scroll machine according to Claim 31 wherein said solenoid valve is operated in a pulsed manner to modulate the capacity of said scroll machine.

33. The scroll machine according to Claim 27 wherein said scroll machine further comprises a shell, said first and second scroll members being disposed within said shell.

34. The scroll machine according to Claim 33 wherein said valve assembly is disposed outside of said shell.

35. The scroll machine according to Claim 34 wherein said valve assembly is attached to said shell.

36. The scroll machine according to Claim 34 wherein said scroll machine further comprises a suction gas inlet, said valve assembly being attached to said suction gas inlet.

37. The scroll machine according to Claim 34 further comprising a tube extending through said shell, said tube fluidically connecting said recess and said valve assembly.

38. The scroll machine according to Claim 37 wherein said first scroll member defines a passage between said recess and said tube.

39. The scroll machine according to Claim 33 wherein said valve assembly is disposed within said shell.

40. The scroll machine according to Claim 39 wherein said valve assembly is attached to said first scroll member.

41. The scroll machine according to Claim 40 wherein said first scroll member defines a passage between said recess and said valve member.

42. The scroll machine according to Claim 27 wherein said component is an end cap of a shell, said first and second scroll members being disposed within said shell.

43. The scroll machine according to Claim 27 wherein said component is a partition separating said suction pressure zone from said discharge pressure zone.